

Please add claim 10.

B2 SUB
C3/ Claim 10. A thermoplastic melt processible composition formed
according to the process of claim 7.

REMARKS

In the Office Action, claim 9 was indicated as being allowable if rewritten to include the limitations of the base claim and any intervening claims. Claim 7 has been amended to include claims 8 and 9 and amended claim 7 should be in allowable form. Claims 8 and 9 have been canceled.

Claim 10 has been added and is directed to a thermoplastic melt-processible composition prepared according to the process of claim 7 and should also be allowable.

Sullivan US 5,902,855

Claims 1-5 were rejected as being anticipated by or obvious in view of Sullivan US 5,902,855. The Examiner pointed to Table 4 of Sullivan '855 that showed 100% neutralization of the copolymer. Nucrel® 035 is an ethylene copolymer made by DuPont having a composition of ethylene/isobutyl acrylate/methacrylic acid. In the attached Declaration, Dr. Chen attempted to neutralize the copolymer to 100% neutralization with magnesium hydroxide by using a conventional continuous melt extruder. However, the viscosity of the copolymer increased to such high level that the extrusion torque required to extrude the highly neutralized copolymer was too high and shut down the extruder. Neutralization of the copolymer was estimated to be at 93% as determined by analysis by an infra-red spectrophotometer. From this experiment, Dr. Chen concluded that such a 100% neutralized copolymer is not melt processible and the copolymer could not be further blended with a metal stearate using conventional melt processing equipment. Applicants' claims and examples clearly point out that the claimed polymer is melt processible. Whatever process that was used by '855 to form the golf balls of Table 4, it was not a continuous melt process that is commercially used to form golf balls using conventional melt processing extrusion equipment.

In the office action, the Examiner said that Sullivan '855 states that metal stearates can be included in the copolymer (col. 5, line 20). But the Examiner failed to point out that Sullivan '855 further goes on to state that these softening agents can be added only "as long as the desired properties produced by the golf ball covers are not impaired" (col. 5, lines 21-23). In the attached Declaration, four different ionomer resins were formulated and applied as golf ball covers and tested for scuff resistance. The first ionomer resin did not contain magnesium stearate while the other three contained 30%, 40%, and 45%, respectively. The scuff resistance of the compositions containing magnesium stearate deteriorated with the amount of magnesium stearate added. Sullivan '855 is directed to improving scuff resistance. There would be no reason for someone skilled in the art to add a metal stearate since it impairs scuff resistance. It would not have been obvious to one skilled in the art to add a metal stearate to an ionomer composition that would deteriorate the property, namely, scuff resistance, that the art wants to improve.

Sullivan '855 and Sullivan US 5,360,760

Claims 1-5 were rejected as being obvious and unpatentable in view of Sullivan '855 and Sullivan US 5,360,760. The Examiner looked to Sullivan '760 as disclosing useful metal stearates but the point is that no one skilled in the art would add a metal stearate that deteriorates the property (scuff resistance) that is to be improved. Sullivan '760 adds nothing to the rejection over and above what is disclosed in Sullivan '855 since one skilled in the art would not add a metal stearate to the ionomer composition since it impairs the properties of the composition.

Sullivan '855 in view of Bush or Rees

Claims 1-8 were rejected as being unpatentable over Sullivan '855 in view of Bush or Rees.

The Office Action notes that Sullivan '855 produces his ionomer/metal stearate blend by combining pre-neutralized ionomer and pre-neutralized stearic acid rather than post-neutralizing an ethylene/acid and stearic acid blend. Rees (example 64) and Bush (example 1; table 1) are cited as allegedly teaching that it is known to post-neutralize an ethylene/acid and stearic acid blend, and the Office

Action asserts that the same final product would result whether pre-neutralized or post-neutralized. Applicants respectfully disagree.

Rees is directed to a process of ionically cross-linking copolymers containing carboxylic acid groups by adding the cation-supplying material at elevated pressure and at a temperature of the melting point of the copolymer. Example 64 of Rees provides the addition, in the order given, of (a) zinc oxide, (b) stearic acid, and (c) acetic acid to a copolymer of ethylene and methacrylic acid while being milled. It is reported that the melt becomes clear and an increase in viscosity is observed only after addition of the acetic acid. Without the addition of acetic acid, there was no apparent neutralization taking place. Applicants note that Example 64 of Rees achieved 57% neutralization, far below Applicants' composition of claim 1 wherein greater than 90% of the acid is neutralized.

Bush is directed to a process for preparing certain ionomers. Example 1 of Bush merely provides a conventional method for making an ionomer. There is no teaching of compositions wherein greater than 90% of the acid is neutralized.

For the reasons discussed above in addressing the rejections in view of Sullivan '855, it is submitted that Applicants' invention is patentable over Sullivan '855 in view of Bush or Rees since neither Bush nor Rees cure the deficiencies of Sullivan '855.

Conclusion

In view of the foregoing amendments and remarks, allowance of the above-referenced application is respectfully requested. The Examiner is invited to contact the undersigned if there are any questions concerning the prosecution of this application.

The Commissioner is authorized to charge Deposit Account 04-1928
(E. I. du Pont de Nemours and Company) for any requisite fees due or to credit
any overpayment.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In showing the changes, deleted material is shown in brackets and inserted material is shown by underlining.

IN THE CLAIMS:

Claim 7. (amended) A process to make a highly-neutralized, melt-processible ethylene copolymer comprising the steps of

- (c) Melt –blending an ethylene α,β ethylenically unsaturated carboxylic acid copolymer or a melt processible ionomer thereof with an organic acid or salt of an organic acid, and
- (d) Concurrently or subsequently adding sufficient cation source to neutralize [more than 90%) about 100% of the acid moieties of the acid copolymer or ionomer thereof and the organic acid or salt thereof;

Wherein the amount of cation source is in excess of the amount that is required to neutralize all of the acid moieties in the acid copolymer or ionomer thereof and the organic acid or salt.

Claims 8 and 9 are deleted.

Claim 10. (added) A thermoplastic melt processible composition formed according to the process of claim 7.